

MATHEMATICS: SIXTH GRADE

Content Area	Grade Level/Span	Strand	Number	Content Area Topic
Mathematics	6	Number Sense and Computation	1	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent and compare quantities in real-world contexts, explaining the meaning of 0 in each situation
Mathematics	6	Number Sense and Computation	2	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite
Mathematics	6	Number Sense and Computation	3	Compare, order and represent rational numbers on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
Mathematics	6	Number Sense and Computation	4	Interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of real numbers and know that the distance between two numbers on the number line is the absolute value of their difference. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
Mathematics	6	Number Sense and Computation	5	Recognize commonly used fractions ($1/2$, $1/3$, $1/4$, $1/5$, $1/10$, $3/4$) and their decimal and percent equivalents.
Mathematics	6	Number Sense and Computation	6	Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator.
Mathematics	6	Number Sense and Computation	7	Interpret, model, and use ratios to show the relative sizes of two quantities. Use ratio language to describe a ratio relationship between two quantities. Use the notations: a/b , a to b , $a:b$.
Mathematics	6	Number Sense and Computation	8	Understand the concept of a unit rate and use rate language in the context of a ratio relationship.
Mathematics	6	Number Sense and Computation	9	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Examples: unit pricing, constant speed, discounts, tax, gratuities, simple interest, conversions within and across measurement systems, and problems that involve finding the whole given a part and the percent.
Mathematics	6	Number Sense and Computation	10	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
Mathematics	6	Number Sense and Computation	11	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem
Mathematics	6	Number Sense and Computation	12	Fluently divide multi-digit whole numbers and make reasonable estimates.
Mathematics	6	Number Sense and Computation	13	Fluently compute with positive fractions and make reasonable estimates..
Mathematics	6	Number Sense and Computation	14	Fluently compute with positive decimals and make reasonable estimates..
Mathematics	6	Number Sense and Computation	15	Solve real-world and mathematical problems involving addition, subtraction, multiplication and division of positive fractions and decimals. Explain why a particular operation was used for a given situation.
Mathematics	6	Number Sense and Computation	16	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
Mathematics	6	Number Sense and Computation	17	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

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Mathematics	6	Number Sense and Computation	18	Graph points with rational number coordinates on a coordinate plane.
Mathematics	6	Number Sense and Computation	19	Solve real-world and mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
Mathematics	6	Algebra and Functions	1	Apply the correct order of operations and the properties of real numbers (i.e., identity, inverse, commutative, associative and distributive properties) to evaluate numerical expressions, including those that use grouping symbols like parentheses and involving whole number exponents. Justify each step in the process.
Mathematics	6	Algebra and Functions	2	Solve problems involving linear functions with integer values. Create a table and graph the resulting ordered pairs of integers on a grid. Look for patterns in how a change in one variable relates to a change in the second variable and write an equation that models the relationship
Mathematics	6	Algebra and Functions	3	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
Mathematics	6	Algebra and Functions	4	Apply the properties of operations to generate equivalent expressions. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).
Mathematics	6	Algebra and Functions	5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true
Mathematics	6	Algebra and Functions	6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
Mathematics	6	Algebra and Functions	7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers
Mathematics	6	Algebra and Functions	8	Write an inequality of the form $x > c$, $x \geq c$, $x < c$, or $x \leq c$ to represent a constraint or condition in a real-world or mathematical problem where c is a rational number. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
Mathematics	6	Algebra and Functions	9	Use variables to represent two quantities in a direct proportional relationship in a real-world problem; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time
Mathematics	6	Geometry and Measurement	1	Recognize that real-world measurements are approximations. Identify and apply appropriate instruments and units for a given measurement situation, taking into account the precision of the measurement desired.
Mathematics	6	Geometry and Measurement	2	Know that the sum of the interior angles of any triangle is 180° and that the sum of the interior angles of any quadrilateral is 360° . Use this information to solve problems.
Mathematics	6	Geometry and Measurement	3	Solve real-world and mathematical problems that involve vertical, adjacent, complementary, and supplementary angles and the properties of triangles and quadrilaterals to solve problems involving the measure of an unknown angle.

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Mathematics	6	Geometry and Measurement	4	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
Mathematics	6	Geometry and Measurement	5	Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique in the context of solving real-world and mathematical problems.
Mathematics	6	Geometry and Measurement	6	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
Mathematics	6	Geometry and Measurement	7	Construct right rectangular prisms from two-dimensional patterns (nets) and use these patterns to compute the surface area of prisms; apply this technique to solve real-world and mathematical problems.
Mathematics	6	Data Analysis, Statistics, and Probability	1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
Mathematics	6	Data Analysis, Statistics, and Probability	2	Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.
Mathematics	6	Data Analysis, Statistics, and Probability	3	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
Mathematics	6	Data Analysis, Statistics, and Probability	4	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
Mathematics	6	Data Analysis, Statistics, and Probability	5	Select, create, and interpret graphical representations of numerical data, including dot plots, histograms, and box plots.
Mathematics	6	Data Analysis, Statistics, and Probability	6	Summarize numerical data sets in relation to their context, such as by:
Mathematics	6	Data Analysis, Statistics, and Probability	7	Report the number of observations.
Mathematics	6	Data Analysis, Statistics, and Probability	8	Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.
Mathematics	6	Data Analysis, Statistics, and Probability	9	Determine quantitative measures of center (median and/or mean) and variability (range, interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
Mathematics	6	Data Analysis, Statistics, and Probability	10	Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

MATHEMATICS: SEVENTH GRADE

Content Area	Grade Level/Span	Strand	Number	Content Area Topic
Mathematics	7	Number Sense and Computation	1	Recognize and compute whole number powers of positive integers
Mathematics	7	Number Sense and Computation	2	Recognize the prime factors of a number and find the prime factorization of whole numbers. Write the results using exponents. Use factors, multiples, prime factorization, composite numbers, and relatively prime numbers to solve problems.
Mathematics	7	Number Sense and Computation	3	Recognize and use the inverse relationship between squaring and finding the square root of a perfect square integer
Mathematics	7	Number Sense and Computation	4	Identify, write, compare and order rational and common irrational numbers ($\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, π) and plot them on a number line.
Mathematics	7	Number Sense and Computation	5	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
Mathematics	7	Number Sense and Computation	6	Recognize and represent proportional relationships between quantities.
Mathematics	7	Number Sense and Computation	7	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin
Mathematics	7	Number Sense and Computation	8	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships
Mathematics	7	Number Sense and Computation	9	Represent proportional relationships by equations
Mathematics	7	Number Sense and Computation	10	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1,r) where r is the unit rate
Mathematics	7	Number Sense and Computation	11	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups, markdowns, gratuities, commissions, fees, percent increase and decrease, and percent error.
Mathematics	7	Number Sense and Computation	12	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram
Mathematics	7	Number Sense and Computation	13	Understand $p + q$ as the number located a distance $ q $ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts
	7	Number Sense and Computation	14	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
Mathematics	7	Number Sense and Computation	15	Apply properties of operations as strategies to add and subtract rational numbers
Mathematics	7	Number Sense and Computation	16	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers
Mathematics	7	Number Sense and Computation	17	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts
Mathematics	7	Number Sense and Computation	18	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts

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Mathematics	7	Number Sense and Computation	19	Apply properties of operations as strategies to multiply and divide rational numbers.
Mathematics	7	Number Sense and Computation	20	Solve real-world and mathematical problems involving addition, subtraction, multiplication and division of integers. Explain why a particular operation was used for a given situation.
Mathematics	7	Number Sense and Computation	21	Know that the decimal form of a rational number terminates in 0s or eventually repeats.
Mathematics	7	Number Sense and Computation	22	Solve real-world and mathematical problems involving the four operations with rational numbers.
Mathematics	7	Number Sense and Computation	23	Fluently compute with rational numbers and make reasonable estimates.
Mathematics	7	Algebra and Functions	1	Apply properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to add, subtract, factor, and expand linear expressions. Justify each step in the process
Mathematics	7	Algebra and Functions	2	Define slope as vertical change per unit of horizontal change and recognize that a straight line has constant slope or rate of change.
Mathematics	7	Algebra and Functions	3	Identify and describe situations with constant or varying rates of change and know that a constant rate of change describes a linear function.
Mathematics	7	Algebra and Functions	4	Graph a line given its slope and a point on the line. Find the slope of a line given its graph.
Mathematics	7	Algebra and Functions	5	Identify situations that involve proportional relationships, draw graphs representing these situations and recognize that these situations are described by a linear function in the form $y = mx$, where the unit rate m is the slope of the line.
Mathematics	7	Algebra and Functions	6	Understand that rewriting an expression in different forms in a problem context can provide affordances about the quantities and how they are related.
Mathematics	7	Algebra and Functions	7	Solve multi-step real-world and mathematical problems involving rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies
Mathematics	7	Algebra and Functions	8	Write and solve real-world and mathematical problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently.
Mathematics	7	Algebra and Functions	9	Write and solve real-world and mathematical problems leading to inequalities of the form $px + q (> \text{ or } \geq) r$ or $px + q (< \text{ or } \leq) r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.
Mathematics	7	Geometry and Measurement	1	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
Mathematics	7	Geometry and Measurement	2	Identify, describe and construct similarity relationships and solve problems involving similarity (including similar triangles).
Mathematics	7	Geometry and Measurement	3	Solve real-world and mathematical problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing. Create a scale drawing by using proportional reasoning.
Mathematics	7	Geometry and Measurement	4	Write and solve equations for real-world and mathematical multi-step problems that involve supplementary, complementary, vertical, and adjacent angles.

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Mathematics	7	Geometry and Measurement	5	Understand the formulas for area and circumference of a circle and use them to solve real-world and mathematical problems; give an informal derivation of the relationship between circumference and area of a circle.
Mathematics	7	Geometry and Measurement	6	Solve real-world and mathematical problems involving perimeter and area of two-dimensional shapes composed of triangles, quadrilaterals, and circles.
Mathematics	7	Geometry and Measurement	7	Solve real-world and mathematical problems involving volume and surface area of three-dimensional objects composed of right rectangular prisms.
Mathematics	7	Geometry and Measurement	8	Construct two-dimensional patterns (nets) for right rectangular prisms and cylinders and use the nets to compute surface area. Apply this technique to solve real-world and mathematical problems.
Mathematics	7	Data Analysis, Statistics, and Probability	1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
Mathematics	7	Data Analysis, Statistics, and Probability	2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.
Mathematics	7	Data Analysis, Statistics, and Probability	3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. Describe how additional data, particularly outliers, added to a data set may affect the mean and/or median.
Mathematics	7	Data Analysis, Statistics, and Probability	4	Find, use, and interpret measures of center (mean and median) and measures of variability (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw informal comparative inferences about two populations.
Mathematics	7	Data Analysis, Statistics, and Probability	5	Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population.
Mathematics	7	Data Analysis, Statistics, and Probability	6	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
Mathematics	7	Data Analysis, Statistics, and Probability	7	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
Mathematics	7	Data Analysis, Statistics, and Probability	8	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
Mathematics	7	Data Analysis, Statistics, and Probability	9	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
Mathematics	7	Data Analysis, Statistics, and Probability	10	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.
Mathematics	7	Data Analysis, Statistics, and Probability	11	Understand and use appropriate terminology to describe complementary and mutually exclusive events.
Mathematics	7	Data Analysis, Statistics, and Probability	12	Find probabilities of compound events using organized lists, tables, tree diagrams, area models, and simulation.
Mathematics	7	Data Analysis, Statistics, and Probability	13	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
Mathematics	7	Data Analysis, Statistics, and Probability	14	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

MATHEMATICS: EIGHTH GRADE

Content Area	Grade Level/Span	Strand	Number	Content Area Topic
Mathematics	8	Number Sense and Computation	1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
Mathematics	8	Number Sense and Computation	2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.
Mathematics	8	Number Sense and Computation	3	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $32 \times 3^{-5} = 3^{-3} = 1/33 = 1/27$.
Mathematics	8	Number Sense and Computation	4	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of perfect squares and cube roots of perfect cubes.
Mathematics	8	Number Sense and Computation	5	Solve real-world and mathematical problems involving numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology.
Mathematics	8	Algebra and Functions	1	Represent simple quadratic functions using verbal descriptions, tables, graphs, and formulas and translate among these representations
Mathematics	8	Algebra and Functions	2	Use tables of values to graph functions of the form $y = nx^2$ and $y = nx^3$ and describe the similarities and differences in the graphs.
Mathematics	8	Algebra and Functions	3	Write and solve linear equations and inequalities, interpret the solution or solutions in their context, and verify the reasonableness of the results
Mathematics	8	Algebra and Functions	4	Translate among tables, equations, verbal expressions and graphs of linear functions in real-world and mathematical situations. Recognize in $y = mx + b$ that m is the rate of change and b is the vertical intercept of the graph.
Mathematics	8	Algebra and Functions	5	Identify functions as linear or nonlinear and contrast their characteristics from tables, graphs and equations
Mathematics	8	Algebra and Functions	6	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
Mathematics	8	Algebra and Functions	7	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .
Mathematics	8	Algebra and Functions	8	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
Mathematics	8	Algebra and Functions	9	Write and solve real-world and mathematical linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
Mathematics	8	Algebra and Functions	10	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
Mathematics	8	Algebra and Functions	11	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations.
Mathematics	8	Algebra and Functions	12	Write and solve real-world and mathematical problems involving two linear equations in two variables.
Mathematics	8	Algebra and Functions	13	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output
Mathematics	8	Algebra and Functions	14	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)

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Mathematics	8	Algebra and Functions	15	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
Mathematics	8	Algebra and Functions	16	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
Mathematics	8	Algebra and Functions	17	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally
Mathematics	8	Geometry and Measurement	1	Perform constructions: angle and segment bisectors, copies of segments and angles, and perpendicular segments. Describe and justify the constructions.
Mathematics	8	Geometry and Measurement	2	Identify, define and describe attributes of three-dimensional geometric objects (right rectangular prisms, cylinders, cones, spheres, and pyramids) and describe the two-dimensional figure that results from slicing these objects.
Mathematics	8	Geometry and Measurement	3	Verify experimentally the properties of rotations, reflections, and translations
Mathematics	8	Geometry and Measurement	4	Lines are taken to lines, and line segments to line segments of the same length
Mathematics	8	Geometry and Measurement	5	Angles are taken to angles of the same measure
Mathematics	8	Geometry and Measurement	6	Parallel lines are taken to parallel lines
Mathematics	8	Geometry and Measurement	7	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them
Mathematics	8	Geometry and Measurement	8	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates
Mathematics	8	Geometry and Measurement	9	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them
Mathematics	8	Geometry and Measurement	10	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles
Mathematics	8	Geometry and Measurement	11	Explain the reasoning of a given proof of the Pythagorean Theorem and its converse.
Mathematics	8	Geometry and Measurement	12	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two dimensions.
Mathematics	8	Geometry and Measurement	13	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
Mathematics	8	Geometry and Measurement	14	Solve real-world and mathematical problems involving volume of cylinders, cones, spheres, and pyramids.
Mathematics	8	Geometry and Measurement	15	Solve real-world and mathematical problems involving surface area of three-dimensional objects composed of right rectangular prisms and cylinders.
Mathematics	8	Data Analysis, Statistics, and Probability	1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
Mathematics	8	Data Analysis, Statistics, and Probability	2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
Mathematics	8	Data Analysis, Statistics, and Probability	3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

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Mathematics	8	Data Analysis, Statistics, and Probability	4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

6-8 MATHEMATICS PROCESS STANDARDS

Content Area	Grade Level/Span	Strand	Content Area Topic
Mathematics	6-8	Process-Practice	Make sense of problems and persevere in solving them.
Mathematics	6-8	Process-Practice	Reason abstractly and quantitatively.
Mathematics	6-8	Process-Practice	Construct viable arguments and critique the reasoning of others.
Mathematics	6-8	Process-Practice	Model with mathematics.
Mathematics	6-8	Process-Practice	Use appropriate tools strategically.
Mathematics	6-8	Process-Practice	Attend to precision.
Mathematics	6-8	Process-Practice	Look for and make use of structure.
Mathematics	6-8	Process-Practice	Look for and express regularity in repeated reasoning.
Mathematics	6-8	Process-Practice	Use technology strategically.